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CALENDER OF GEOMAGNETIC ACTIVITY IN THE U.S.S.R.

Geomagnetic activity for 1957 and the first quarter of 1958 is considered using the data of 22 magnetic observatories of the Soviet Union.

The following magnetic character figures are applied for the description and quantitative study of geomagnetic activity:

Km - monthly mean value of the index from all the USSR observatories,

A - monthly mean amplitude corresponding to Km,

C - monthly mean character three-grades' figure from all the observatories of the USSR.

The value of the u -measure for 1957 is taken as the average of the u -measure values of 6 observatories: Moscow, Kazan, Sverdlovsk, Irkutsk, Tbilisi, Tashkent.

1. 1957 may be expected to be the year of the maximum geomagnetic activity of the current 11 years' cycle. The u -measure and the annual average relative number of sun spots w in 1957 exceeded the corresponding maximum values of the measure and w of the previous cycle.

1957 u = 1.81

w = 222.7

1947 u = 1.52

w = 142.1

2. The monthly mean value of the K -index, Km; the monthly mean amplitude A corresponding to Km and the monthly mean three-grades' characteristic C (0 - 12) show a considerable maximum in September, 1957 (Table 1). The unusual facts for the annual course of activity were the maximum of June, nearly comparable with the activity of equinoxes and the great activity of winter months.

The annual course of Km, A and C can be clearly seen in 1954 - the year of the minimum magnetic activity.

Magnetic activity can be judged from one of the mentioned character figures. This is confirmed by the data of I-1957-III-1958 and the previous years.

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Table 1.

Monthly values of activity measures I 1957-III-1958

Year	Month	K_m	A	C	N				D	W
					w	m	s	vs		
1957	I	2.78	32.88	0.52	2	1	1	-	7.5	186.1
	II	2.83	32.87	0.55	1	4	-	-	7.0	146.5
	III	3.28	44.78	0.71	2	2	2	1	21.0	193.9
	IV	3.22	39.17	0.63	6	1	1	-	11.5	215.6
	V	2.76	27.50	0.31	2	2	-	-	5.0	191.2
	VI	2.22	42.02	0.60	-	2	1	1	15.0	189.1
	VII	2.81	31.10	0.46	3	1	1	-	8.5	224.0
	VIII	2.75	29.56	0.43	1	4	-	-	7.0	201.9
	IX	3.53	57.73	0.84	-	--	-	5	40.0	267.4
	X	2.84	30.26	0.40	-	2	-	--	3.0	328.9
	XI	3.10	37.30	0.61	1	1	1	-	6.5	245.4
	XII	3.15	36.80	0.63	4	1	-	-	5.5	285.3
1958	I	3.01	32.77	0.51	3	-	-	-	3.0	247.6
	II	3.52	50.31	0.74	-	2	-	1	11.0	191.2
	III	3.57	46.12	0.69	1	5	-	-	8.5	204.6

The character figure $D = N + 1.5 N_1 + 4 N_2 + 8 N_3$

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where N , N_1 , N_2 , N_3 , designate monthly numbers of weak, moderate, strong and very strong storms respectively is in good agreement with K_m , A and C .

3. If to take into consideration the difference of the annual magnetic activity course the activity of the Arctic and the Antarctic agree in general.

The comparison of K for the Arctic and K for the Antarctic indicated that the K - scale for the Antarctic chosen on the basis of the Tikhaya Bay scale is somewhat overestimated especially for the Pionerskaya station.

The annual course according to the K - indices for separate stations of the Antarctic is represented by parallel curves, being in conformity with geomagnetic latitudes, when using one K -index scale at all stations.

Table 2. Monthly mean values of K for the Arctic and K for the Antarctic and separate stations of the Antarctic.
Monthly mean values of Q -index of Mirny.

	1957						1958					
	VII	VIII	IX	X	XI	XII	I	II	III	IV	V	
K (the Arctic)	3.5	3.4	4.2	3.4	3.6	3.8	3.6	4.3	4.6	4.1	4.0	
K (the Antarctic)	2.5	2.4	3.3	3.2	3.7	4.1	3.7	3.8	3.5	2.6	2.4	
K (Mirny)	2.9	2.9	3.8	3.8	4.4	4.6	4.2	4.4	4.0	3.1	2.9	
K (Oasis)	2.2	2.5	3.4	3.2	3.8	4.1	3.7	4.4	3.9	3.0	2.6	
K (Pionerskaya)	2.3	2.0	2.6	2.5	3.0	3.3	3.0	3.0	2.8	2.0	1.8	
K (Vostok)	-	-	-	-	-	-	3.8	3.8	3.3	2.5	2.3	
Q (Mirny)	2.4	2.2	3.4	3.3	4.1	4.2	3.9	4.1	3.7	3.0	2.3	

In table 2 K of the Arctic are obtained using the data of Tikhaya Bay, Cheluskin Cape, Dikson, Wellen, Tixie, Murmansk.

4. K and Q - indices of Mirny (table 2) are parallel in the average monthly course with the excess of K .

The new Q - index is a more detailed character figure but there is no essential discrepancy between it and the K - index according to the statistical results for a long period of time.

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5. It is reasonable to compile a catalogue of magnetic activity proceeding from the data of USSR magnetic observatories which would include:

1. List of observatories
2. Lower limits of K-index scale
3. Amplitude limits of magnetic storms
4. Three-hourly range K-index
5. Q- index according to the data of polar observatories
6. List of magnetic storms
7. List of bay magnetic disturbances
8. List of quiet and disturbed days.